

IN THE CLAIMS

Claims 1-22 (canceled)

Claim 23 (new): Method of determining the local contrast at the level of each pixel (p_c) of an array (M_p) of photosensitive pixels disposed in at least one dimension (x, y), in which method, during respective successive image capture cycles, a signal (L_c) is generated that is representative of the local luminance captured by each pixel, the luminance signals ($L_{pn}, L_{p(n+1)}, L_{p(n-1)}$) being integrated values of the luminance values captured by respective pixels (p_c, p_L, p_R, p_A, p_B),

said method consisting in sampling the integrated values of the signals representing the luminances captured by the pixels (p_L, p_R, p_A, p_B) adjacent a pixel concerned (p_c) at a time in said cycle at which the integrated value of the luminance captured by said pixel concerned (p_c) becomes equal to a predetermined reference value (V_{ref}, V_{WHITE}), and determining the local contrast of said pixel concerned (p_c) on the basis of the values sampled in this way.

Claim 24 (new): Method according to claim 23, wherein said reference value (V_{ref}) is chosen as an intermediate value of the difference between a maximum white level value (NB) and a maximum black level value (NN) liable to be captured by said pixels (p_c, p_L, p_R, p_A, p_B), said intermediate value preferably being equal to half this difference.

Claim 25 (new): Method according to claim 24, consisting in calculating the local contrast by applying to said at least one dimension of said array the following expression:

$$C_{pn} = \frac{L_{p(n-1)} - L_{p(n+1)}}{L_{pn}}$$

in which

C_{pn} is the local contrast calculated for said cycle of a pixel of rank n (p_c) in the row of the array oriented along said dimension,

L_{pn} is a signal representing the luminance captured by the pixel of rank n (p_c),

$L_{p(n-1)}$ is a signal representing the luminance captured by the preceding adjacent pixel in said row of rank $n-1$ (p_L), and

$L_{p(n+1)}$ is a signal representing the luminance captured by the next adjacent pixel in said row of rank $n+1$ (p_R).

Claim 26 (new): Method according to claim 24, wherein the integrated values of the signals representing the luminances captured by said adjacent pixels (p_L , p_R , p_A , p_B) are accumulated in respective capacitors (14_R , 14_L , 14_A , 14_B) at the time at which the integrated value of the pixel concerned (p_c) reaches said reference value (V_{ref}), said capacitors providing the values necessary for the calculation of the contrast.

Claim 27 (new): Method according to claim 24, wherein, if said array takes the form of a matrix (M_p) of pixels with two dimensions, the contrast calculation is effected on the basis of the following equations:

$$C_x = L_L - L_R$$

and

$$C_y = L_A - L_B$$

in which:

- C_x is the local contrast component in the x direction of the matrix,
- C_y is the local contrast component in the y direction of the matrix,
- L_L , L_R are signals representative of the luminances

captured by the respective pixels (p_L , p_R) adjacent the pixel concerned (p_C) in the x direction,
- L_A , L_B are signals representative of the luminances captured by the respective pixels (p_A , p_B) adjacent the pixel concerned (p_C) in the y direction,
said expressions being used to calculate the components of the contrast vector at the level of said pixel concerned (p_C).

Claim 28 (new): Method according to claim 26, wherein each pair of accumulated values ($V_L(t_{ref})$, $V_R(t_{ref})$ and $V_A(t_{ref})$, $V_B(t_{ref})$) belonging to said x and y directions, respectively, is subjected to four-quadrant analog multiplication by a cosinusoidal signal and a sinusoidal signal of the same frequency and amplitude as said cosinusoidal signal, respectively, and the results (I_x , I_y) of the corresponding multiplications are added to form the modulus and the phase of the local contrast vector corresponding to said pixel concerned (p_C).

Claim 29 (new): Method according to claim 23, wherein said reference value is chosen to be a maximum white level value (V_{WHITE}) liable to be captured by said pixels (p_C , p_L , p_R , p_A , p_B).

Claim 30 (new): Method according to claim 29, consisting, during each of said image capture cycles, in measuring the times at which, in a group of pixels made up of the pixel concerned and its adjacent pixels (p_C , p_L , p_R , p_A , p_B), the integrated values of the luminance values captured by those pixels reach said white level value (V_{WHITE}) and taking as the value of the local contrast the integrated value for the pixel concerned when the first of the adjacent pixels (p_R , p_L , p_A , p_B) reaches said white level value.

Claim 31 (new): Method according to claim 30, consisting in

generating pulse signals (S_L , S_R , S_B , S_A) coding each of said times and effecting a logical combination of said pulse signals (S_L , S_R , S_B , S_A) to determine the orientation of said local contrast as a function of the order in which the integrated values of the pixels of said groups of pixels (p_C , p_L , p_R , p_A , p_B) reach said white level value (V_{WHITE}).

Claim 32 (new): Method according to claim 31, wherein the order of said times is coded on three bits (B_0 , B_1 , B_2) and the orientation of said contrast value is determined in octants of the trigonometrical circle.

Claim 33 (new): Method according to claim 30, consisting in taking as a second component of the contrast the integrated value for the pixel concerned when the second of said integrated values for the adjacent pixels (p_R , p_L , p_A , p_B) reaches said white level.

Claim 34 (new): Sensor for determining the local contrast of an observed scene by detecting the luminance emanating from that scene using an array comprising at least one row of pixels disposed in at least one dimension of said array, said sensor comprising in each pixel (p_C) a photosensitive circuit (ph) supplying a signal representing the local luminance (V_{ci}) emanating from the image and captured by said pixel in the form of an integration value ($V_p(t)$), and a comparator (10) for comparing said signal representing the local luminance to a reference value (V_{ref} , V_{WHITE}) and supplying a command signal when said luminance signal is equal to said reference value.

Claim 35 (new): Sensor according to claim 34, comprising a source delivering a reference value (V_{ref}) that is equal to an intermediate value of the difference between a maximum white level value (NB) and a maximum black level value (NN) liable to be captured by said

pixels, this value preferably being half this said value.

Claim 36 (new): Sensor according to claim 35, comprising a local contrast calculation circuit (15) and means (12_R, 12_L, 12_A, 12_B, 14_R, 14_L, 14_A, 14_B) for applying to said calculation circuit (15), in response to said command signal, the signals representing the local luminance of the pixels (p_L, p_R, p_A, p_B) immediately adjacent the pixels concerned (p_C).

Claim 37 (new): Sensor according to claim 36, wherein said signals representing the local luminance (V_p(t), V_L(t), V_R(t), V_A(t), V_B(t)) take the form of voltages.

Claim 38 (new): Sensor according to claim 37, wherein said means for applying to said calculation circuit (15) said signals representing the local luminance comprise a set of capacitors (14_R, 14_L, 14_A, 14_B) for storing the voltages (V_L(t), V_R(t), V_A(t), V_B(t)) supplied by said immediately adjacent pixels while said integrated value of said pixel concerned evolves towards the reference value (V_{ref}).

Claim 39 (new): Sensor according to claim 38 comprising for each of said directions (x, y) analog four-quadrant multiplier means (18a, 18b) connected to multiply the respective voltages stored in said capacitors with sinusoidal voltages, an adder (22) being provided for summing the result of the multiplications effected by said multiplier means in order to deduce therefrom the local contrast vector of said pixel concerned.

Claim 40 (new): Sensor according to claim 39, wherein said analog multiplier means comprise for each of said directions (x, y) a multiplier (18a, 18b) implemented by means of transistors (M1 to M6), the stray capacitances of the transistors (M1 to M4) provided

at the inputs of said multipliers forming said respective storage capacitors (14_R , 14_L , 14_A , 14_B).

Claim 41 (new): Sensor according to claim 34 comprising a source delivering said reference value (V_{WHITE}) that is equal to a maximum white level value liable to be captured by said pixels (p_C , p_L , p_R , p_A , p_B).

Claim 42 (new): Sensor according to claim 41, comprising in each pixel (p_C) means for delivering a binary signal (S_L , S_R , S_B , S_A) when, during each of said cycles, said integrated value reaches said white value (V_{WHITE}), OR logic means (29) connected to receive from said adjacent pixels (p_L , p_R , p_A , p_B) the binary signal (S_L , S_R , S_B , S_A) delivered thereby, where applicable, and logical combination means (34) for assigning an orientation value to the contrast value captured by the pixel concerned as a function of the binary state of each of said binary signals (S_L , S_R , S_B , S_A).

Claim 43 (new): Sensor according to claim 41, wherein, when the first of the signals (S_L , S_R , S_B , S_A) goes high, the integrated value for the pixel concerned is stored in a capacitor.

Claim 44 (new): Sensor according to claim 42, containing a second capacitor in which is stored the integrated voltage of the pixel concerned when the second of said binary signals (S_L , S_R , S_B , S_A) goes high.